

## ABSTRACT OF THE DISCLOSURE

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The present invention aims to provide a dispersion compensator which is ultra small in size and low in cost and capable of controlling dispersion compensating values, and an optical transmission system using the dispersion compensator.

A dispersion property of light that propagates through defects in a photonic crystal, is used to compensate for each wavelength dispersion. A dispersion compensator comprises a dispersion-compensating-waveguide array in which a plurality of dispersion compensating waveguides having dispersion compensating values different from one another are placed, a drive unit for driving the dispersion-compensating-waveguide array, and optical fibers for inputting/outputting a light signal. Each of the dispersion compensating waveguides comprises regular waveguides and a waveguide made of defects in photonic crystal. The lengths of the waveguides made of the defects in photonic crystal are changed one by one to make dispersion compensating values different from one another.